

This page intentionally left blank

October 2015

**Preliminary Section 7(a) Wild and Scenic Rivers Act Evaluation
Supporting Information**

N-12 Niobrara East & West Project



**Supporting Information for the N-12 Project's Effects on the
Outstandingly Remarkable Values of the
Missouri National Recreational River**

TABLE OF CONTENTS

SECTION 1.0 INTRODUCTION	1
1.1 Purpose of this Document	1
1.2 Location and Description of the Missouri National Recreational River	1
SECTION 2.0 LEGISLATIVE PURPOSE FOR ESTABLISHING THE MISSOURI NATIONAL RECREATIONAL RIVER.....	3
2.1 Management of the Missouri National Recreational River.....	3
2.1.1 General Management Plan	4
2.1.2 Nondegradation and Enhancement Policy	4
2.1.3 National Park Service Organic Act	4
2.2 Outstandingly Remarkable Values	5
SECTION 3.0 DETAILED DESCRIPTION OF THE PROPOSED WATER RESOURCES PROJECT	7
3.1 Project and Its Sponsors.....	7
3.2 Purpose of and Need For the Project	7
3.3 Location of the Project.....	8
3.4 Detailed Project Description	8
3.4.1 No-Action Alternative.....	8
3.4.2 Alternative A1, Elevation Raise on Existing Alignment.....	13
3.4.3 Alternative A2, Elevation Raise on Parallel Alignment	13
3.4.4 Alternative A3, Base of Bluffs Alignment.....	14
3.4.5 Alternative A7, Base of Bluffs Modified Alignment	14
3.4.6 NDOR's Applied-for Project.....	15
3.5 Duration of the Project.....	15
3.6 Relationship to Past and Future Management Activities	15
3.7 Proposed Mitigation.....	16
SECTION 4.0 THE FREE-FLOWING CONDITION OF THE MISSOURI NATIONAL RECREATIONAL RIVER.....	19
4.1 Hydrology of the Missouri River in the Study Area	19
4.2 Temporary Impact on the Free-Flowing Character of the Missouri National Recreational River	20
4.3 Permanent Impact on the Free-Flowing Character of the Missouri National Recreational River	20
4.4 Conclusion.....	21
SECTION 5.0 WATER QUALITY OF THE MISSOURI NATIONAL RECREATIONAL RIVER	23
5.1 Existing Water Quality	23
5.2 Temporary Impacts on Water Quality	24
5.2.1 Temporary Within-River Impacts.....	24
5.2.2 Temporary Impacts from the Construction	25
5.3 Permanent Impacts on Water Quality.....	25
5.3.1 Sedimentation	25
5.3.2 Materials from the Roadway and Storm Runoff Control System	25
5.3.3 Road Maintenance Materials.....	25
5.4 Conclusion.....	26
SECTION 6.0 CULTURAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER.....	27

6.1	Outstandingly Remarkable Cultural Values	27
6.2	Existing Historic and Cultural Resources	27
6.3	Impact on Cultural Resources	28
6.4	Inadvertent Late Discoveries	28
6.5	Conclusion	29
SECTION 7.0 ECOLOGICAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER		31
7.1	Outstandingly Remarkable Ecological Values	31
7.2	Natural Environment	31
7.2.1	Impact on Riparian or Floodplain Conditions	31
7.2.2	Impact on Upland Conditions	32
7.3	Conclusion	32
SECTION 8.0 FISH AND WILDLIFE VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER		35
8.1	Outstandingly Remarkable Fish and Wildlife Values	35
8.2	Fish and Wildlife	35
8.2.1	Fisheries	35
8.2.2	Wildlife	36
8.2.3	Threatened and Endangered Species	36
8.2.4	Impact on Existing Hydrologic or Biologic Processes	36
8.2.5	Impact on Fish and Wildlife Habitat	36
8.3	Potential Off-Site Changes	37
8.4	Conclusion	38
SECTION 9.0 GEOLOGICAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER		39
9.1	Outstandingly Remarkable Geological Values	39
9.2	Existing Geological Conditions	39
9.3	Conclusions	39
SECTION 10.0 RECREATIONAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER		41
10.1	Outstandingly Remarkable Recreational Values	41
10.2	Recreational Opportunities on the Missouri National Recreational River	41
10.2.1	Water-Based Recreation	41
10.2.2	Land-Based Recreation	41
10.2.3	Existing Noise in Recreation Areas	42
10.3	Impacts on Recreation	42
10.3.1	Scenic Impacts	42
10.3.2	Noise Impacts	42
10.3.3	Instream Obstruction	43
10.4	Conclusion	43
SECTION 11.0 SCENIC VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER		45
11.1	Outstandingly Remarkable Scenic Values	45
11.2	Overview of the Appearance of the Missouri National Recreational River	45
11.2.1	Landform and Terrain	45
11.2.2	Vegetation	46
11.2.3	Wildlife	46

11.2.4 Methodology of Impact Analysis..... 46

11.3 Impacts on Views and Viewers..... 47

11.4 Conclusion..... 48

SECTION 12.0 REFERENCES51

SECTION 13.0 LIST OF PREPARERS.....53

LIST OF FIGURES

- Figure 1, Project Study Area
- Figure 2, NDOR’s Applied-for Project
- Figure 3, Key Observation Points

This page intentionally left blank

SECTION 1.0 INTRODUCTION

The U.S. Army Corps of Engineers (the Corps) and the National Park Service (NPS) have coordinated to develop this preliminary evaluation document. NPS will use this document as a framework to complete its Section 7(a) of the Wild and Scenic Rivers Act evaluation and final determination following publication of the Draft EIS. The coordination among the Corps and NPS is ongoing.

1.1 PURPOSE OF THIS DOCUMENT

The purpose of this document is to evaluate the impact of the Nebraska State Highway 12 (N-12) project on the Outstandingly Remarkable Values (ORVs) for which the 39-Mile District of the Missouri National Recreational River (MNRR) was established by Congress. A water resources project is defined in 36 CFR 297.3: “other construction of developments which would affect the free-flowing characteristics of a [designated river] or [congressionally authorized study river]”. The Interagency Wild and Scenic Rivers Coordinating Council (2004) defines water resources projects as: bridges and other roadway construction/reconstruction projects ...and activities that require a [Section] 404 [of the Clean Water Act] permit from the [U.S. Army Corps of Engineers].” Thus, transportation projects that are also water resources projects are subject to Section 7 of the Wild and Scenic Rivers Act. Construction activities, including dredge and fill, will modify the waterway, although not necessarily to a great degree or damaging extent (Interagency Wild and Scenic Rivers Coordinating Council 2004). The project is evaluated under the “direct and adverse” effects standard. The project is evaluated for its effects on free-flowing condition, water quality and each ORV for which the river was listed. If NPS finds that the project would have a “direct and adverse effect” on the values for which the MNRR was added to the national system, the project would be prohibited (Interagency Wild and Scenic Rivers Coordinating Council 2004).

1.2 LOCATION AND DESCRIPTION OF THE MISSOURI NATIONAL RECREATIONAL RIVER

The Missouri River is the longest river in North America. From the juncture of three tributaries at Three Forks, Montana, the Missouri River flows southeast for 2,320 miles (3,701 km) before joining the Mississippi River a few miles north of St. Louis, Missouri. The Missouri River flows through several different landscapes and physical regions on its path from the Rocky Mountains to the Mississippi River (National Park Service [NPS] 2005).

The Missouri River Mainstem Reservoir System consists of six major dams and reservoirs in Montana, North Dakota, South Dakota, and Nebraska. Fort Peck Dam was constructed in the late 1930s. The remaining five large mainstem dams (Garrison, Oahe, Big Bend, Fort Randall, and Gavins Point) were constructed in the Missouri River in the 1950s and early 1960s, following the Flood Control Act of 1944, which granted the U.S. Army Corps of Engineers (Corps) responsibility for flood-control structures in the lower Missouri River (National Research Council 2002). It can store 73.1 million acre-feet (af) of water, making it the largest reservoir system in North America (Corps 2012). The Corps operates the Reservoir System to serve Congressionally authorized project purposes of flood control, navigation, irrigation, hydropower generation, water supply, water quality, recreation, and fish and wildlife (National Research Council 2002).

The MNRR comprises two remnant free-flowing reaches of the Missouri River, separated by Lewis and Clark Lake along the Nebraska–South Dakota boundary. The eastern portion (the 59-Mile District) starts one mile downstream from Gavins Point Dam near Yankton, South Dakota, and continues downriver to Ponca, Nebraska. The western portion (the 39-Mile District), and the focus of this evaluation, starts immediately downstream from Fort Randall Dam near Pickstown, South Dakota (river mile [RM] 880), and continues downriver to Running Water, South Dakota (RM 840). At the same time that the 39-Mile District was established, the lower 20 miles (32 km) of the Niobrara River and the lower 8 miles (13 km) of Verdigre Creek were also designated as recreational rivers (NPS 2005).

The MNRR comprises 98 miles of the mainstem of the Missouri River, 28 miles of tributaries, and 34,159 upland acres within designated boundaries. The 39-Mile District exhibits native floodplain forest, tallgrass and mixed grass prairies, and habitats for several endangered species. The 59-Mile District exhibits the Missouri’s riverine character, with abundant islands, bars, chutes, and snags (NPS 2008).

SECTION 2.0

LEGISLATIVE PURPOSE FOR ESTABLISHING THE MISSOURI NATIONAL RECREATIONAL RIVER

Congress passed The Wild and Scenic Rivers Act (Public Law [P.L.] 90-542; 16 United States Code [USC] 1271-1287) (the Act) in 1968. The Act established a method for providing federal protection for certain free-flowing rivers, preserving them and their immediate environments for the use and enjoyment of present and future generations. To qualify for this protection, these rivers must be free-flowing, be relatively undeveloped, and possess one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value(s). Preservation of selected rivers in their free-flowing condition was intended to complement the dams, diversions, and other construction on key streams.

There are more than 10,000 miles (16,000 km) of protected riverways in the National Wild and Scenic Rivers System. Rivers within the system are classified as wild, scenic, or recreational. Recreational rivers include those that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

The 59-Mile District was established in 1978, by P.L. 95-625, and the 39-Mile District was established in 1991, by P.L. 102-50 (NPS 2005). Purposes for which this portion of the river was set aside include to preserve the river in a free-flowing condition and protect it for the enjoyment of present and future generations; to provide streambank protection compatible with the river's significant natural and cultural resources; to preserve the significant scenic, recreational, biological, geological, prehistoric, and historic resources of the Missouri River corridor; and to provide for a level of recreation and recreational access that does not adversely impact the river's significant natural and cultural resources.

The authority for this evaluation is found in Section 7(a) of the Act. Through the language of this Section, Congress expressed the clear intent to protect river values from the harmful effects of water resources projects. The Act prohibits federal agencies from assisting in the construction of any water resources project that would have a direct and adverse effect on a designated river or Congressionally authorized study river. Section 7(a) of the Act states:

...no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration.

2.1 MANAGEMENT OF THE MISSOURI NATIONAL RECREATIONAL RIVER

NPS manages the 39-Mile District of the MNRR under a general management plan, and the 1916 NPS Organic Act. In addition NPS must comply with the National Environmental Policy Act (NEPA), the Endangered Species Act, Executive Order 11988, Executive Order 11990, Executive Order 12898, Prime and Unique Farmland, Clean Air Act, Clean Water Act (CWA), Fish and Wildlife Coordination Act, National Historic Preservation Act of 1966, the Antiquities Act of 1906, Archeological Resources Protection Act of 1979, American Indian Religious Freedom Act, Native

American Graves Protection and Repatriation Act of 1990, and the Presidential Memorandum dated April 24, 1994, although these are not detailed in this document.

2.1.1 General Management Plan

The Act provides that after establishment, boundaries must be set and a general management plan must be prepared. NPS, under Section 10 of the Act, prepared the plan and its corresponding Environmental Impact Statement (EIS) to set forth the basic management philosophy for the recreational rivers. NPS prepared the plan and EIS to meet the requirements of the enabling legislation, NEPA, and other regulations. The managing agency must emphasize the protection of recreational, scenic, historic, and scientific features and provide for public use and enjoyment of these values. Management plans can establish varying degrees of intensity for protection and development, based on the special attributes of the area. The general management plan remains in effect until amended; plans are generally reviewed every 10 to 15 years (NPS 1997).

2.1.2 Nondegradation and Enhancement Policy

The Act provides management mandates to agencies responsible for administering components of the System. Section 10(a) of the Act states:

Each component of the National Wild and Scenic Rivers System shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values.

The Final Revised Guidelines for Eligibility, Classification, and Management of River Areas (47 Federal Register 39454-39461) provide further clarification. These guidelines interpret Section 10(a) as a non-degradation and enhancement policy for all designated river areas, regardless of their classification as wild, scenic, or recreational.

The designation of a river as wild, scenic, and/or recreational is based on the extent of development at the time of its designation. The Federal Register guidelines further state that although each classification (that is, wild, scenic, or recreational) permits certain development existing at the time of designation, the criteria for classification does not imply that additional inconsistent development is permitted in the future. The area will be managed to protect and enhance the values for which it was designated while providing public recreation and resource uses that do not adversely impact or degrade those values. Land use and development on private lands existing within the river area when the river was designated may be permitted to continue, but new land uses must be evaluated for compatibility with the purposes of the Act.

To achieve a nondegradation standard, the river-administering agency must document baseline resource conditions and monitor changes to these conditions (Interagency Wild and Scenic Rivers Coordinating Council 2002).

2.1.3 National Park Service Organic Act

The Secretary of the Interior was assigned administration and day-to-day management by Congress, who delegated it to NPS. The MNRR is a unit of the National Park System and subject to the 1916 NPS Organic Act. Under the Organic Act, the NPS should:

...promote and regulate the use of the federal areas known as national parks, monuments, and reservations...by such means and measures as conform to the[ir] fundamental purpose...to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.

2.2 OUTSTANDINGLY REMARKABLE VALUES

To be eligible for inclusion in the National Wild and Scenic Rivers System, a river area must be relatively free-flowing and, along with its adjacent land area, must possess one or more outstandingly remarkable value: scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. The general management plan (NPS 1997) initially identified the ORVs of the MNRR but NPS (2012a) recently updated them. NPS has determined that the MNRR contains the following ORVs: cultural, ecological, fish and wildlife, geological, recreational and scenic. NPS describes the ORVs by MNRR segment. The project would occur within Segment 2: Missouri River – Choteau Creek to Running Water (River Mile [RM] 852-840). The project would not directly impact Segment 3: Niobrara River – The Western Boundary of Knox County, Nebraska to the Confluence with the Missouri River.

This page intentionally left blank

SECTION 3.0 DETAILED DESCRIPTION OF THE PROPOSED WATER RESOURCES PROJECT

3.1 PROJECT AND ITS SPONSORS

The U.S. Army Corps of Engineers (Corps), Omaha District, Regulatory Division, received a permit application from the applicant, the Nebraska Department of Roads (NDOR), on September 11, 2015 requesting authorization for the placement of fill material in waters of the U.S. in connection with NDOR's proposed Nebraska Highway 12 (N-12) roadway east and west of the Village of Niobrara (Niobrara), Nebraska (project).

N-12 is an east–west two-lane highway in northeastern Nebraska that provides a route for local residents and through traffic. N-12 is situated along the northern portions of the northernmost counties in Nebraska. As there are limited resources in this area that provide for east–west vehicle traffic movement, N-12 provides a vital travel link for adjacent rural residents and for traffic traveling north–south and east–west through northeastern Nebraska. It is NDOR's intent that N-12 in the Study Area would be a safe and reliable roadway that meets current design standards.

The Corps, Omaha District Regulatory Branch is the lead federal agency, responsible for the preparation of the EIS and Record of Decision (ROD). In addition, the Corps would decide whether to issue a permit for the project under Section 404 of the CWA and Section 10 of the Rivers and Harbors Appropriation Act of 1899.

The Nebraska Department of Roads (NDOR) is responsible for the design of the alternatives and the construction of the preferred alternative. NDOR provides data for analysis in the environmental review process. NDOR is the project proponent and is the Applicant on the Section 404 permit application.

HDR is the third party contractor to the Corps. Third party contractors are independent contractors who assist Corps staff in its environmental review and preparation of environmental documents, including the EIS. HDR is under contract with NDOR for the project.

3.2 PURPOSE OF AND NEED FOR THE PROJECT

The detailed project purpose and need is described in Chapter 1 of the Draft EIS.

The project purpose is to provide a reliable transportation link on N-12 between Verdel, Niobrara, and State Spur 54D (S-54D) in Nebraska that eliminates existing roadway deficiencies caused by operations of Lewis and Clark Lake and that safely accommodates current and projected traffic levels while maintaining regional connectivity. Specifically, the roadway must maintain reliable connectivity for regional traffic using Nebraska State Highway 14 (N-14) and the intersecting county road system and accessing the Village of Niobrara.

The need for the project is driven by flooding associated with the Missouri River and Lewis and Clark Lake, which has resulted in an unreliable roadway, safety concerns, and an interruption in regional connectivity.

3.3 LOCATION OF THE PROJECT

The project is located in northeastern Nebraska near Niobrara in Knox County, as shown in Figure 1. N-12 runs parallel to a reach of the Missouri River and is predominately located within the Missouri River floodplain both east and west of Niobrara. West of the Village of Niobrara, N-12 crosses the Niobrara River and its floodplain, but the project would not occur in the Niobrara River and its floodplain or within the Village of Niobrara, as described below.

NDOR proposes to relocate the eastern and western floodplain segments of N-12 to locations south of their existing locations. The segment of N-12 that is in the bluffs, including the segment that goes through the Village of Niobrara, will remain the same. The west segment is approximately 6.4 miles long and extends from just east of Verdel, Nebraska, on the west end to 2 miles west of the bridge over the Niobrara River. The west segment spans from approximate mile marker (MM) 151.42 to MM 157.57. The east segment is approximately 6 miles long and extends from just east of Buckeye Road in Niobrara, NE to approximately 1 mile east of Spur 54D (S-54D). The east segment spans from approximate MM 161.47 to MM 167.74. A new connection to the Chief Standing Bear Memorial Bridge (N-14) and SD-37 would be developed. Once the roads are completed, the existing N-12 roadway would be removed to the existing ground level.

The Study Area includes potential corridors that are outside of the Missouri River floodplain that would address the purpose of the project (as discussed in Section 1.3). Figure 1 identifies these two segments and the Study Area for the project. The N-12 Study Area extends approximately 21.8 miles from RM 853.4 to RM 831.6.

3.4 DETAILED PROJECT DESCRIPTION

The alternatives are described and illustrated in Chapter 2 of the EIS and are summarized below. While the No-Action alternative and five action alternatives were carried forward in the EIS, this document will only analyze the potential effects of NDOR's Applied-for Project, Alternative A7, Base of Bluffs Modified Alignment.

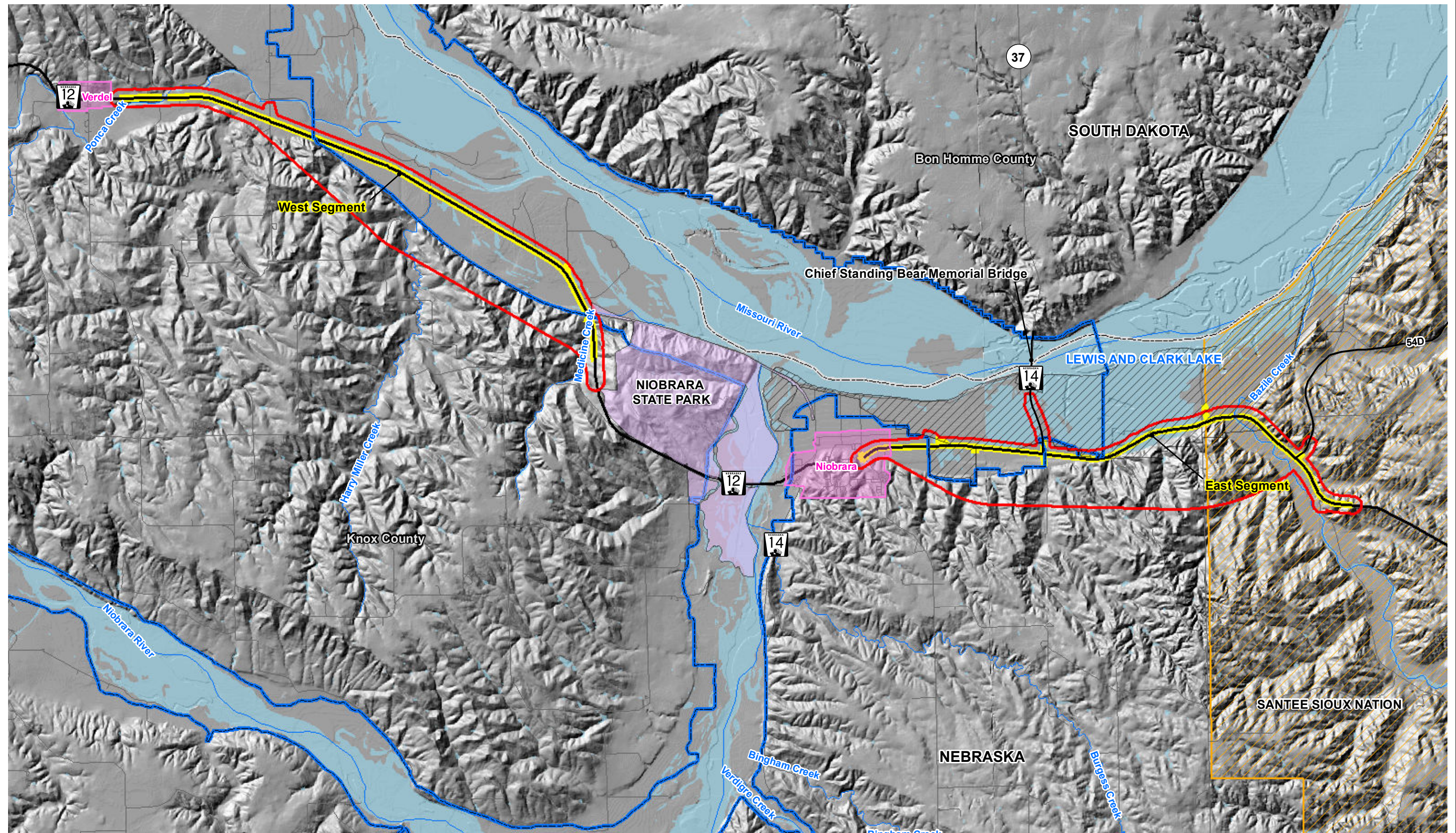
3.4.1 No-Action Alternative

Evaluation of the No-Action Alternative is required by 40 CFR 1502.14(d) and 1508.25(b). The No-Action Alternative is used as a benchmark for comparison of the environmental effects of the Action Alternatives. Under the No-Action Alternative, it is assumed that the NDOR would withdraw its permit application and not proceed with implementation of the applied for project or the Corps would deny the permit for the applied for project. For purposes of this analysis, regardless of if NDOR withdraws its application or the Corps does not issue a permit, it is assumed that NDOR would continue to maintain N-12 for traffic and make improvements to correct the design deficiencies that have been created due to past flood events.

Under the No-Action Alternative, the purpose of the project—to provide a reliable transportation link on N-12 between Verdel, Niobrara, and S-54D in Nebraska that eliminates existing roadway deficiencies caused by operations of Lewis and Clark Lake and that safely accommodates current and projected traffic levels while maintaining regional connectivity—would not be met. Flooding associated with the Missouri River and Lewis and Clark Lake, which has resulted in an unreliable roadway, safety concerns, and an interruption in regional connectivity, would not be remedied.

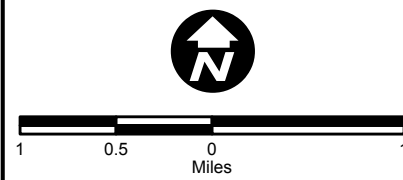
The flooding of N-12 in the Study Area due to Missouri River sedimentation (originating primarily from the Niobrara River and Bazile Creek) and Mainstem System releases would continue and interim roadway improvements implemented in 1995 by the Corps that are not consistent with NDOR design standards would continue under this alternative as would frequent roadway maintenance activities. Safety on N-12 in the Study Area would continue to be jeopardized by the existing roadway design deficiencies and driver hazards during flooding events. This is undesirable as there are limited transportation resources in northeastern Nebraska that allow for east-west vehicle traffic movement. N-12 provides a vital link for rural residents and east-west through traffic.

This page intentionally left blank



Aerial Imagery: 2006 NAIP, Knox County, Nebraska

Legend	Study Area	Wildlife Management Areas
N-12 Segments	Waterways	Recreational River Boundary
Nebraska Highway 12	City Limits	Santee Sioux Nation
Roads	Counties	Niobrara State Park



Project Study Area
N-12 Niobrara East and West
Knox County, Nebraska
Environmental Impact Statement

DATE	October 2015
FIGURE	1

This page intentionally left blank

3.4.2 Alternative A1, Elevation Raise on Existing Alignment

Alternative A1 involves raising the existing N-12 roadway on the current alignment to an elevation approximately 9.5 feet above the water surface elevation of the Missouri River during the 100-year flood event on the west and east segments, respectively. This is approximately 14 to 15 feet higher than existing N-12. In addition, the roadway would be widened, embankments would be graded, and curvature and ingress and egress considerations for county roads and private access would be modified to satisfy current Nebraska roadway design standards and to facilitate an adequate level of service for east–west traffic.

This alternative requires the construction of a two-lane temporary roadway parallel to the existing roadway, allowing construction of the new road to be performed directly on (when practicable) the existing alignment. Portions of the two-lane temporary roadway would, in some areas, be located outside of the future embankment of the new roadway. Travel speeds would be reduced through these areas. When the new roadway is open to accept traffic, the two-lane temporary roadway would be removed, and the remainder of the new roadway embankment and/or roadside ditches would be constructed. In addition, any portion of the temporary roadway that is outside of the area used by the new roadway would also be removed.

Alternative A1 is estimated to cost \$168.8 million.

3.4.3 Alternative A2, Elevation Raise on Parallel Alignment

Alternative A2 involves constructing the road on a raised-elevation alignment parallel and adjacent to existing N-12. Portions of this alternative would be constructed north of existing N-12 while other portions would be constructed south of existing N-12, dependent on site constraints and design requirements.

This alternative would be constructed at an elevation approximately 8.5 feet and 9 feet above the projected water surface elevation of the Missouri River 50-years into the future (based from 2013) during a 100-year flood event (including compensation for potential wave action, assumed to be 3.5 feet) (NDOR 2013). Roadway design would involve 12 foot driving lanes, 8- to 10-foot shoulders.

A wave attenuation berm that is 30 feet in length with 15:1 side slopes would be incorporated on the north side of the roadway into those sections where the new highway embankment would be shifted to the south of the existing highway section. The wave attenuation berm with a vegetative wave break was designed to take advantage of the existing highway embankment where applicable. Where the new highway embankment would be located along (Existing Alignment) or located north of (Parallel Alignment) the existing highway, a standard 3:1 embankment section would be used with riprap placed along the 3:1 slope of the embankment (NDOR 2009). These design features satisfy current Nebraska roadway design standards and would facilitate an adequate level of service for east–west traffic.

The new roadway would be constructed with an offset alignment. The offset alignment, in association with a system of shoofly connections and temporary roads, would allow uninterrupted traffic on both lanes of the existing roadway during construction. Existing intersections with county roads and private crossings would remain open during construction to the greatest extent possible.

Alternative A2 is estimated to cost \$164.0 million.

3.4.4 Alternative A3, Base of Bluffs Alignment

Alternative A3 would shift the roadway alignment south to the base of the Missouri River bluffs and would be a new travel corridor. However, there are many locations where this alternative's alignment is identical to Alternative A1 or A2 due to the proximity of the bluffs to the Missouri River. In the west segment, this alternative would deviate from the existing N-12 alignment just east of Ponca Creek and would rejoin the existing alignment just north of County Road 892. In the east segment, the alignment would deviate from the existing alignment east of 4th Avenue in Niobrara, NE and would reconnect with existing N-12 at approximately S-54D. A new connection to the Chief Standing Bear Memorial Bridge (N 14) and SD-37 would be developed.

Although still in the 100-year floodplain of the Missouri River, as designated by the Federal Emergency Management Agency (FEMA), this alternative moves the alignment to the southern extreme of the floodplain where possible. A new connection to the Chief Standing Bear Memorial Bridge (N 14) and SD-37 would be developed. For both segments, where the new alignment deviates from the exiting N-12 alignment, the N-12 roadway would be removed to the existing ground level. Roadway removal includes all pavement and roadway embankment.

This alternative would be constructed at an elevation approximately 9 feet and 11.5 feet above the projected water surface elevation of the Missouri River 50-years into the future (based from 2013) during a 100-year flood event (including compensation for potential wave action, assumed to be 3.5 feet) (NDOR 2013). Roadway design would involve 12 foot driving lanes, 8- to 10-foot shoulders. Construction of a road at the A3 location would include total elimination of the entire existing N-12 roadway embankment, therefore, no wave attenuation berm would be incorporated. Segments of this alternative within the floodplain would use a standard 3:1 embankment section with rock riprap placed along the 3:1 slope of the embankment (NDOR 2009b). These design features satisfy current NDOR design standards and would facilitate an adequate level of service for east-west traffic

The new roadway would be constructed on a predominantly new alignment. The new alignment, in association with a system of shoofly connections and temporary roads, would maintain traffic on both lanes of the existing roadway during construction. Existing intersections with county roads and private crossings would remain open during construction to the greatest extent possible.

Alternative A3 is estimated to cost \$161.8 million.

3.4.5 Alternative A7, Base of Bluffs Modified Alignment

Alternative A7 is the same alignment as Alternative A3, but incorporates 9,302 feet (1.8 miles) of bridges. This alternative would shift the roadway alignment south to the base of the Missouri River bluffs and would be a new travel corridor. However, there are many locations where this alternative's alignment is identical to Alternative A1 or A2 due to the proximity of the bluffs to the Missouri River. In the west segment, this alternative would deviate from the existing N-12 alignment just east of Ponca Creek and would rejoin the existing alignment just north of County Road 892. In the east segment, the alignment would deviate from the existing alignment east of 4th Avenue in Niobrara, NE and would reconnect with existing N-12 at approximately S-54D. A new connection to the Chief Standing Bear Memorial Bridge (N 14) and SD-37 would be developed.

Although still in the 100-year floodplain of the Missouri River, as designated by the Federal Emergency Management Agency (FEMA), this alternative moves the alignment to the southern extreme of the floodplain where possible. A new connection to the Chief Standing Bear Memorial Bridge (N 14) and SD-37 would be developed. For both segments, where the new alignment deviates from the exiting N-12 alignment, the N-12 roadway would be removed to the existing ground level. Roadway removal includes all pavement and roadway embankment.

This alternative would be constructed at an elevation approximately 9 feet and 11.5 feet above the projected water surface elevation of the Missouri River 50-years into the future (based from 2013) during a 100-year flood event (including compensation for potential wave action, assumed to be 3.5 feet [NDOR 2013]). Roadway design would involve 12 foot driving lanes, 8- to 10-foot shoulders. Construction of a road at the A3 location would include total elimination of the entire existing N-12 roadway embankment, therefore, no wave attenuation berm would be incorporated. Segments of this alternative within the floodplain would use a standard 3:1 embankment section with rock riprap placed along the 3:1 slope of the embankment (NDOR 2009b). These design features satisfy current NDOR design standards and would facilitate an adequate level of service for east-west traffic

The new roadway would be constructed on a predominantly new alignment. The new alignment, in association with a system of shoofly connections and temporary roads, would maintain traffic on both lanes of the existing roadway during construction. Existing intersections with county roads and private crossings would remain open during construction to the greatest extent possible.

Alternative A7 is estimated to cost \$217.6 million.

3.4.6 NDOR's Applied-for Project

NDOR selected Alternative A7 as its applied-for alignment and submitted a Section 404 application for this alignment to the Corps on September 11, 2015 prior to the release of the Draft EIS for public review. Alternative A7 is the alignment evaluated in this document. See Figure 2.

3.5 DURATION OF THE PROJECT

Assuming the Corps issues a Section 404 permit for the Applied-for Project or NDOR amends their application to coincide with modifications deemed necessary by the Corps in order to issue a permit, NDOR would proceed into project design. This would occur after the Record of Decision is issued. This design and contractor selection process would take between 4-5 years. Construction would commence following selection of a contractor. It is anticipated construction would take three years, pending potential construction delays (such as weather and resultant river flows and material availability). Once constructed, the roadway would remain in place indefinitely.

3.6 RELATIONSHIP TO PAST AND FUTURE MANAGEMENT ACTIVITIES

The land along the MNRR is now managed by a complex patchwork of private property owners and local, state, tribal, and federal agencies, some with overlapping jurisdictions. Recreational river area, according to the Act, include those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past (NPS 1997). Guidelines developed by the U.S. Department of the Interior (USDOI) and the U.S. Department of Agriculture (USDA) state that land uses and

developments on private land in the river area that were in existence when the river was designated may be allowed to remain (47 Federal Register 39454-39461).

The MNRR's Final General Management Plan (Plan) was adopted in 1997 (NPS 1997). The Plan is needed to present a consistent and unified approach to management of the recreational rivers. The preferred alternative emphasizes the rural landscape, maintaining patterns of land use and ownership at the present level of development and visitor use while protecting and enhancing significant natural and cultural resources. Under the preferred alternative, management relies heavily on the cooperation of local property owners and officials.

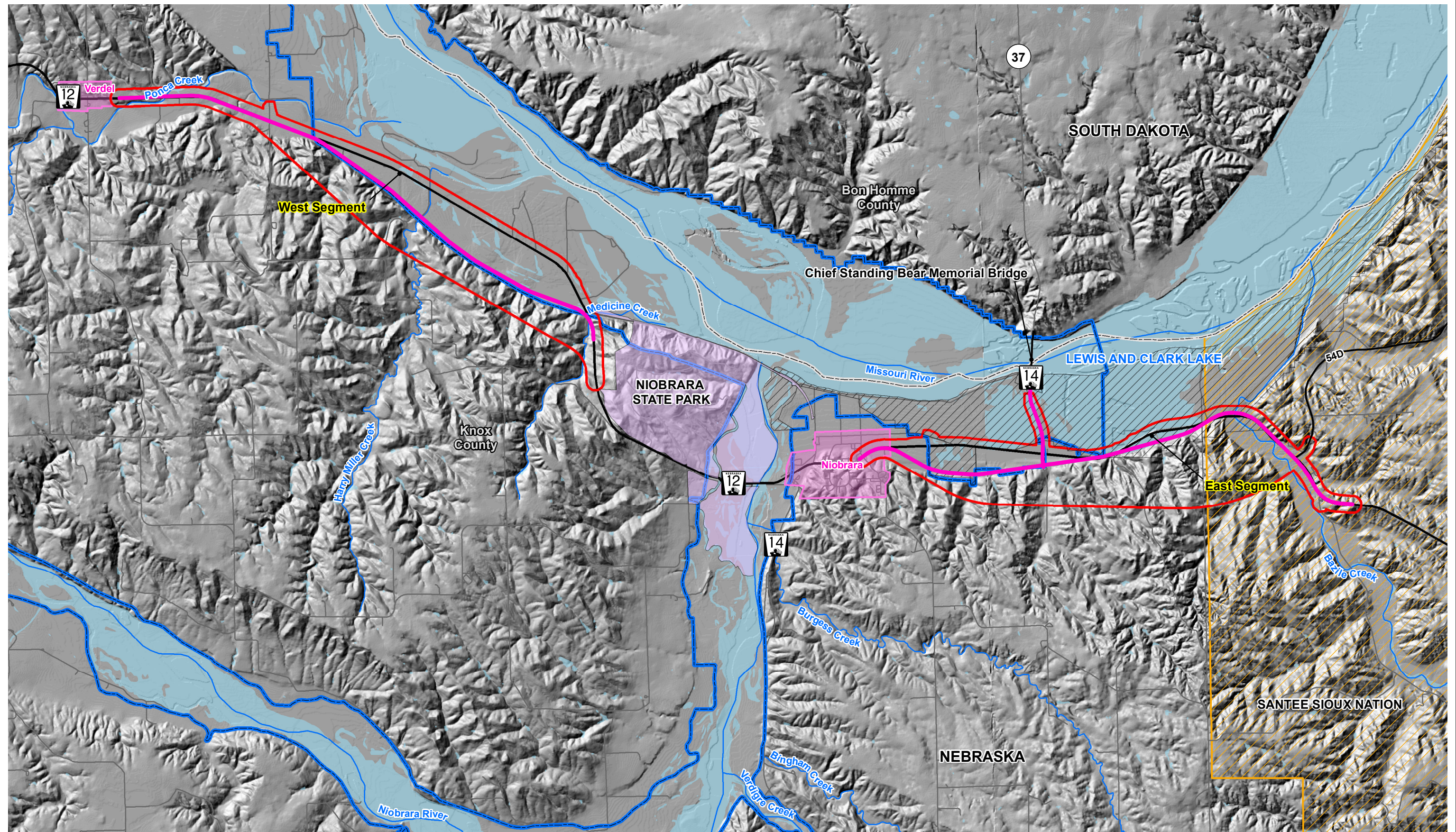
N-12 exists today in its current state and was in place when the 39-Mile District of the MNRR was designated. The east segment of N-12 from approximate MM 162.50 to MM 168.00 was paved in 1958. The west segment of N-12 from approximate MM 151.40 to 160.00 was paved in 1963 (Varilek 2015).

3.7 PROPOSED MITIGATION

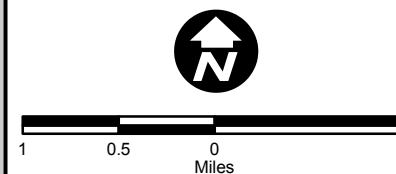
Potential impacts on ORVs that are determined to have a direct and adverse effect must be avoided or eliminated. NPS may recommend measures to eliminate adverse effects (36 CFR 297.5(3)(b)).

Please refer to the Draft EIS for a complete discussion of all potential mitigation options for the project. Not all mitigation is known at the time of publication, and may be updated as agency coordination and public involvement occurs following publication of the Draft EIS.

Z:\Projects\NDOR\84534_N12_EIS\map_docs\mxd\Final\EIS_Figures\Study_Area_Map_Fig_1_2.mxd



Aerial Imagery: 2006 NAIP, Knox County, Nebraska



NDOR's Applied-for Project - Alternative A7
N-12 Niobrara East and West
Knox County, Nebraska
Environmental Impact Statement

DATE
October 2015

FIGURE
2

This page intentionally left blank

SECTION 4.0 THE FREE-FLOWING CONDITION OF THE MISSOURI NATIONAL RECREATIONAL RIVER

Section 16(b) of the Act states:

As used in this Act, the term free-flowing as applied to any river or section of a river means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modifications of the waterway.

4.1 HYDROLOGY OF THE MISSOURI RIVER IN THE STUDY AREA

The Missouri River forms the state boundary between Nebraska and South Dakota. The reach of this river in which the project is located is in a relatively natural condition. Riverbanks vary from relatively flat, sandy beach areas to vertical faces 10 to 15 feet high where active erosion is taking place.

Hydrology of the Missouri River in the area of the proposed project is controlled by releases from Fort Randall Dam, backwater from Lewis and Clark Lake, as well as hydrologic and sedimentation effects of the Niobrara River. Fort Randall Dam is operated for eight authorized purposes: flood control, navigation, irrigation, hydropower, water supply, water quality control, recreation, and fish and wildlife (Corps 2012). The presence of dams and reservoirs highly alter the river's flow, sediment, temperature and nutrient regime from their natural condition. Flow regulation of the Missouri River results in reductions in peak flows in the spring, and low flow periods in winter, and more short-term fluctuations in flow levels for hydropower generation..

Hydro-peaking from Fort Randall Dam (increase electricity output during periods of high consumer demand) can create daily discharge variation in excess of 35,000 cubic feet per second in the 39-Mile District. However, the effects of hydropower peaking flows from Fort Randall Dam become diminished in Segment 2 due to the distance from the dam (NPS 2012a). The tailwater region directly downstream of the Fort Randall Dam is experiencing bed degradation, while the bed aggradation occurs near RM 849, approximately 30 miles downstream. The N-12 project Study Area extends from approximately RM 853.4 to 831.6. The Niobrara River is a sand-bedded tributary with a large sediment load that enters the Missouri River near RM 845. The Corps estimates that the Niobrara River contributes 60 percent of the sediment inflow into the Lewis and Clark Lake. A delta has developed in the upstream third of the lake as a result of the river's reduced capacity to carry sediment. Stages in tributaries and the groundwater table have also risen as a result of the aggradation. The annual estimated transport of sediment to the lake is 3.3 million cubic yards, which would result in complete filling of the lake by the year 2175 (USGS 2006).

The delta of Lewis and Clark Lake has grown an average of 344 feet longitudinally each year from 1993 to 2003, indicating an average growth rate of 0.65 mile per decade. Although contributing to loss of storage capacity in the reservoir, loss of waterfront access, and increasing groundwater levels, the growth of the delta has produced abundant backwater and wetland habitat (USGS 2006).

Bank erosion is aerial surface loss in acres of usable or productive land along a river's banks. Post-dam bank erosion rates in the 39-Mile District is 24 acres per year (ac/yr), compared to pre-dam bank

erosion rates of 148 ac/yr. Valley width in the 39-Mile District varies from 0.9 to 2.7 miles and channel widths vary from 0.2 to 2.6 miles (USGS 2006).

There are no impoundments, diversions, or straightening of the river channel within the MNRR. However, NPS (2012a) calculates that approximately 11.4 percent of the banks along Segment 2 have been modified by bank stabilization. Additional infrastructure in the Study Area includes boat ramps (Verdel Landing, Niobrara, Niobrara Ferry, Running Water and other private ramps), Chief Standing Bear Memorial Bridge, and irrigation intakes (NPS 2012a).

The bed aggradation caused by the backwater from Lewis and Clark Lake, as well as hydrologic and sedimentation effects of the Niobrara River directly affect N-12 in the Study Area.

4.2 TEMPORARY IMPACT ON THE FREE-FLOWING CHARACTER OF THE MISSOURI NATIONAL RECREATIONAL RIVER

Alternative A7 would not have a direct impact on the free-flowing character of the MNRR. Alternative A7 would temporarily impact 953 linear feet of MNRR tributaries.

4.3 PERMANENT IMPACT ON THE FREE-FLOWING CHARACTER OF THE MISSOURI NATIONAL RECREATIONAL RIVER

Alternative A7 would not have a direct impact on the MNRR. It would impact 2,763 linear feet of MNRR tributaries. Impacts on waterways would result from the removal and installment of culverts and bridges, which place fill in or alter the channel. However, Alternative A7 does not result in a net loss of channel length.

Alternative A7 would have eight bridges along the west segment, ranging in length from 150-foot-spans to 950-foot-spans. The east segment of A7 would have six bridges, with spans ranging in length from 525 feet to 1,400 feet. Alternative A7 would involve constructing 1.8 miles of bridges over several sections of the roadway along the base of the bluffs. Alternative A7 would also involve the construction of approximately 19 single, twin, triple and quad box culverts, ranging in height from 5 feet to 12 feet, and approximately 11 pipe culverts, ranging in diameter from 30 inches to 60 inches (see Appendix B of the Draft EIS for a complete listing of bridge lengths and culvert sizes).

For both segments, where the new alignment deviates from the exiting N-12 alignment, the N-12 roadway would be removed to the existing ground level. Roadway removal includes all pavement and roadway embankment.

An assessment of Alternative A7's effect on Missouri River storage is available in Appendix H of the PDEIS (Alternative A7 is the same alignment as Alternative A3, which was analyzed in the technical memorandum). The analysis found that Alternative A7 has a negligible effect on Missouri River conveyance, a moderately positive effect on Missouri River floodplain storage and a negligible effect on Lewis and Clark Lake storage.

4.4 CONCLUSION

Impacts on the free-flowing character of the MNRR would be positive due to the increase in floodplain connectivity, the negligible effect on Missouri River conveyance in the MNRR, and the lack of net loss of MNRR tributary channel length.

This page intentionally left blank

SECTION 5.0 WATER QUALITY OF THE MISSOURI NATIONAL RECREATIONAL RIVER

Section 1(b) of the Act states:

The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

Section 12 (c) of the Act reads:

The head of any agency administering a component of the national wild and scenic rivers system shall cooperate with the Administrator, Environmental Protection Agency and with the appropriate State water pollution control agencies for the purpose of eliminating or diminishing the pollution of waters of the river.

The protection of water quality in the designated rivers is explicitly directed as part of the Congressional declaration of policy under Section 1(b) of the Act. However, the Act does not prescribe water quality criteria for a river designated as recreational. Additional management policies under Section 12(c) of the Act reinforce the role of the U.S. Environmental Protection Agency (EPA) and appropriate State water pollution control agencies as enforcing the CWA and related water quality standards. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Wild and Scenic River Act-administering agencies work in cooperation with the EPA and State agencies to address water quality issues that affect the rivers as directed by the Act.

5.1 EXISTING WATER QUALITY

Water quality in the Study Area is generally good. The water quality factor on the Missouri most affected by dam construction was turbidity. The water became less turbid, or much clearer, after the dams reduced natural sediment transport. The clean water leads to downcutting, narrowing of the river channel, rapid erosion on the new banks, loss of sandbars, and reduction in nutrients important in fish and wildlife habitat (NPS 1997).

The Missouri River in this location is classified in Title 117 - Nebraska Surface Water Quality Standards as a State Resource Water Class A¹ and is protected under the Antidegradation Clause. Title 117, Chapter 3 states: "These are surface waters ...which constitute an outstanding State or National resources, such as waters within national or state parks, national forests or wildlife refuges, and waters of exceptional recreational or ecological significance. Waters which provide a unique habitat for federally designated endangered or threatened species and rivers designated under the

¹ State Water Resource Class A: surface waters which constitute an outstanding State or National resource or provide unique habitat for federally designated endangered or threatened species and rivers designated under the Wild and Scenic rivers Act.

Wild and Scenic Rivers Act are also included. The existing quality of these surface waters shall be maintained and protected” (NDEQ 2006).

Nebraska-designated uses for the Missouri River in this segment include aesthetics, recreation, class A warm water fishery, and agricultural water supply. Nebraska’s 2014 Section 303(d) list does not identify this segment as an impaired waterway. The 2014 Water Quality Integrated Report classified the Missouri River in this segment as a waterbody with all designated uses met and supporting beneficial use (NDEQ 2014).

Overall, the water quality of the 39-Mile District appears to be stable, although there are seasonal and flow-related variations. The water below Fort Randall Dam is colder than ideal conditions for sustaining aquatic life (NPS 2012a).

Lewis and Clark Lake is classified to meet the following uses: aesthetics; agricultural water supply – Class A; industrial water supply; fish consumption; public drinking water supply; warm water aquatic life – Class A; and primary contact recreation. Lewis and Clark Lake is currently fully supporting all of these uses (EPA 2015). The South Dakota Department of Environment and Natural Resources (DENR) reports that Lewis and Clark Lake is classified to meet the following uses: commerce and industry waters; domestic water supply waters; fish and wildlife propagation, recreation and stock watering waters; immersion recreation waters; irrigation waters; limited contact recreation waters; and warmwater permanent fish life propagation waters; and is currently meeting the water quality standards for all uses (DENR 2008).

The reach of the MNRR that includes the Study Area is minimally impacted by humans. The local watershed is fairly undeveloped and the reach is relatively unaffected by water pollution due to municipal, agricultural and industrial land uses in the watershed (NPS 2012a).

5.2 TEMPORARY IMPACTS ON WATER QUALITY

Construction of the proposed roadway has the potential to impact water quality. These threats are related to construction activities in the vicinity of the Missouri River. Impacts on water quality from the roadway include those that could arise from erosion of exposed soils and hydraulic fluid or fuel spills from construction equipment. Best management practices (BMPs) would be required of the contractor to alleviate temporary impacts on water quality during construction.

5.2.1 Temporary Within-River Impacts

Alternative A7 would be constructed in wetlands that are connected to the Missouri River and in tributaries to the MNRR. No work would directly occur within the river. Alternative A7 would temporarily impact 23.2 acres of wetlands and 953 linear feet of channel.

NDEQ issues general permits that authorizes the discharge of stormwater associated with construction activities. The construction of Alternative A7 would meet the requirements for the NDEQ NPDES, and a SWPPP would be developed, therefore preventing short-term effects to surface water and groundwater.

5.2.2 Temporary Impacts from the Construction

Water quality impacts from this project which could originate from the roadway to the adjacent wetlands include erosion of exposed soils on the banks and from the potential spill of fuel, lubricating oils, hydraulic fluids, or other chemicals.

Erosion from Roadway

Construction of the roadway would require disturbance to the existing soils adjacent to the river. Erosion control methods would be required of the contractor in an effort to minimize the potential for sediment reaching the river or adjacent wetlands. In addition, the contractor would be required to monitor and maintain the erosion controls employed throughout the course of the project. Should the methods employed prove to be ineffective, the State administering the construction contract would have the authority to upgrade erosion control measures accordingly.

Fuel, Lubricating Oils, and Hydraulic Fluid Spills

Land-based construction equipment has the potential to spill fuel, lubricating oils, and hydraulic fluids. When emulsified, these substances could be toxic to aquatic life. The opportunity to control such a spill on land is much greater though and the risk to water quality should be quite low if spills are cleaned up immediately. If spills from land-based equipment are not cleaned up quickly and properly, it could run off into the river and be toxic to aquatic life.

5.3 PERMANENT IMPACTS ON WATER QUALITY

Potential threats to water quality once the N-12 project is built include sedimentation from erosion and introduction of road maintenance materials. However, the increased elevation of a new roadway would prevent any overtopping and its affect on water quality.

5.3.1 Sedimentation

Alternative A7 would be located adjacent to the Missouri River and wave action and high flows have the potential for periodic erosion of the roadway bed. The potential for erosion would be greatest during high flows, and erosion could contribute suspended particles to the Missouri River. Alternative A7 would be constructed with the appropriate reinforcement, and routine maintenance activities, such as placement of additional riprap or backfill and compaction, would be conducted.

5.3.2 Materials from the Roadway and Storm Runoff Control System

Potential pollutants from the roadway include gas, oil, tire and brake particles, litter, non-airborne exhaust particles, dust, salt, sand, and gravel from normal traffic use, and any number of hazardous materials from a catastrophic spill on the roadway. Stormwater routed through ditches could transmit these pollutants to the river. The effectiveness of a storm runoff control system assumes adequate storage, retention time, and treatment of the pollutants.

5.3.3 Road Maintenance Materials

Pollutants from roadway maintenance include salt, paint, pesticides, and other chemicals applied to maintain uninhibited travel on the road. These materials may be introduced into the river via adjacent

wetlands and their impact on water quality would depend on the exact material and the quantity reaching the river's surface.

5.4 CONCLUSION

The water quality impacts during construction would be temporary in nature. BMPs must be selected, designed, installed, and maintained correctly to minimize the risk of polluting water resources. In general, the following stormwater permit requirements would protect water quality during construction (NDOR 2008):

- Minimize soil disturbance and protect natural features.
- Phase construction activity in a manner that minimizes impacts on resources.
- Control stormwater quantity and velocity flowing onto and through the project.
- Stabilize soils and protect slopes.
- Protect storm drain inlets.
- Establish perimeter controls.
- Detain runoff, before it is discharged, to provide time for sediment to settle out of suspension.
- Establish stable construction exits.
- Inspect and maintain all pollution control measures.
- Keep chemicals out of traffic and environmentally sensitive areas.

Long-term, the water quality may be improved due to reduced overtopping. Water quality impacts due to storm runoff, sedimentation, and road maintenance materials would be similar to existing conditions.

SECTION 6.0 CULTURAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER

6.1 OUTSTANDINGLY REMARKABLE CULTURAL VALUES

NPS (2012a) describes the outstandingly remarkable cultural values for Segment 2 of the 39-Mile District:

The [Missouri R]iver between Choteau Creek and Running Water is the confluence of a culturally significant area representing a travel and trade route through Dakota Territory. The intersection of the Niobrara and Missouri rivers created a natural crossroads for the interaction of American Indian cultures, fur traders, explorers, settlers, and Mormons. The area between Verdel and Niobrara is particularly rich with sites important to Ponca heritage such as the Ponca Fort. The Poncas are long-time inhabitants of the confluence of the Niobrara and Missouri rivers where they first met fur traders and later Lewis and Clark. Many archeological sites at Niobrara State Park and surrounding lands document the long-term prehistoric and historic use of the area.

Historic ferry crossings at Niobrara and Running Water are a testament to the importance of this area as a major north-south travel corridor. The Running Water Ferry Crossing was replaced by Chief Standing Bear [Memorial] Bridge, named after an important cultural figure within the American Indian community. This area also captures the transition in transportation modes between train travel and steamboat. The volatile nature of the Missouri River and transportation modes across the country impacted the location and livelihood of settlements, including communities like Niobrara and Running Water.

6.2 EXISTING HISTORIC AND CULTURAL RESOURCES

The rich and varied topography, geology, animal life, and vegetation have provided many opportunities for many different prehistoric Indian groups to hunt, gather, trade, and build settlements. The archeological remains of their tools, weapons, campgrounds, food, and other objects provide clues to their lifestyles and habits. Prehistoric groups documented in the area include Paleoindian people, Archaic groups, Plains Woodland, Great Oasis, and Coalescent Tradition.

More recently, but prior to the arrival of Europeans, historic American Indian tribes include the Omaha, Ponca, Santee Dakota, Pawnee, Arikara, Ioway, and Lakota are believed to have used the area. Euroamerican exploration began in the early 1700s, with Spanish traders soon setting up trading posts. In the 1800s, military expeditions began and Indians were soon confined to reservations as immigration increased. Steamboat and ferry service on the river aided this immigration. Any steamboat wrecks in the MNRR would be deeply buried (Olson 2009).

The Lewis and Clark National Historic Trail (NHT) passes through the MNRR. The trail reconstructs the path Meriweather Lewis and William Clark traveled from Wood River, Illinois to the Pacific Ocean and back, from 1804 to 1806. Lewis and Clark led the Corps of Discovery, collected samples of plants and animals they encountered, met with tribes to attempt to establish peace among them, mapped their route, and documented their travels in extensive journals. Specifically in the Study

Area, Lewis and Clark would have traveled the Missouri River and camped at the confluence of the Niobrara and Missouri rivers.

Late 19th and early 20th Century immigrants constructed the farmsteads, historic houses and barns, cemeteries and sites associated with early settlement. Railroads further facilitated the development of rural communities in the Study Area. In response to the need for flood control, navigation, irrigation, and hydroelectric power, Fort Randall Dam and Gavins Point Dam were constructed in the mid 1950s (NPS 1997). When rising water continued to threaten Niobrara in the 1960s, the entire town was moved in the 1970s to its current location. The old town site now is a community golf course (Olson 2009).

The river valley contains a series of cultural landscapes that were created through the interaction of people with natural forms or forces. These landscapes include residences and farm buildings, bridges, roads and trails, fences and corrals, orchards and gardens, cultivated fields, grazing land, and forested areas. These landscapes are characteristic of this area, not only because of the landforms and vegetation, but because of the ways people settled them and used its resources (NPS 1997).

6.3 IMPACT ON CULTURAL RESOURCES

Alternative A7 would avoid all known cultural resources. The archaeological surveys completed for the project found that while two archaeological sites are within the Area of Potential Effect of Alternative A7, this alternatives would have no effect on Site 25KX2 (Minarik I) and Site 25KX9 (Minarik II) (Ludwickson 2009). The Nebraska State Historical Society concurred with a preliminary determination of no effect on standing structures, archaeological sites and traditional cultural properties, and would offer a final opinion on the project as tribal consultation is completed (Geib, August 2015).

There would be no direct impact on the NHT. The visual analysis, presented in Appendix M of the Draft EIS, considered the impact on the entire MNRR, including the NHT.

Project facilities such as borrow pits, waste disposal areas, and wetland mitigation sites not presently identified at this stage in the project would need to be evaluated for the presence of significant cultural resources.

6.4 INADVERTENT LATE DISCOVERIES

If presently unknown buried archaeological deposits, including human burials, are discovered during construction, work would halt pending full consultation with Nebraska SHPO regarding a plan of further required action (NDOR Standard Specification 107.10).

If archaeological sites cannot be avoided, comprehensive archaeological data recovery under a Memorandum of Agreement would need to be developed in consultation with all parties and implemented (Ludwickson 2009).

Encountering human burials requires action under the Nebraska Unmarked Human Skeletal Remains and Burial Goods Protection Act. Under the provisions of this act, when human skeletal remains and burial goods are discovered and law enforcement determines that a crime is not involved, Nebraska State Historical Society (NSHS) staff would be contacted by the appropriate county attorney's office. The staff would be required to conduct an onsite investigation to determine the origin and identity of

the remains and promptly relate their findings in writing to the county attorney and interested parties, who may include a descendant Indian tribe, a descendant family, or the Nebraska Indian Commission. Field evaluations may consist of inspection of disinterred or intact remains or artifacts. Disinterred remains may be collected and turned over to descendent parties or the county attorney for reburial. Intact remains are to be left in place. The only specified exception to this procedure involves intact materials encountered during public highway, road, or street construction. These remains may be excavated and reinterred to allow continuation of construction (NSHS 2010).

The excavation and inadvertent discovery provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) apply only to federal and tribal lands. Under NAGPRA, tribal lands are lands (including private lands) within the exterior boundaries of an Indian reservation. If the burial ground is not on federal or tribal land, then the excavation and inadvertent discovery provisions of NAGPRA do not apply. However, other state and federal cultural preservation laws apply, and state or local cemetery laws may also apply (NPS 2010).

6.5 CONCLUSION

NDOR would design Alternative A7 to avoid all known historic and cultural resources. There may be inadvertent discoveries as construction proceeds, but those finds would be reported to SHPO and the tribes. Alternative A7 would not impact the cultural values of the MNRR.

This page intentionally left blank

SECTION 7.0 ECOLOGICAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER

7.1 OUTSTANDINGLY REMARKABLE ECOLOGICAL VALUES

NPS (2012a) describes the outstandingly remarkable ecological values for Segment 2 of the 39-Mile District:

The area between Choteau Creek and Running Water contains nearly continuous, majestic Cretaceous bluffs along both sides of the Missouri River. This reach has numerous large sandbars, islands, some chutes and backwaters, and the highest channel complexity in the Missouri National Recreational River due to deposition in the Lewis and Clark Lake delta area. The Missouri River is connected to its floodplain in this reach and provides large woody debris from cottonwood forests important for maintaining channel complexity and contributing nutrients to the ecosystem. Old-growth cottonwood forests are more limited here than in segment 1 [Fort Randall Dam to Choteau Creek]; however, there is a greater degree of cottonwood regeneration providing unique habitats for songbirds requiring early successional vegetation. Extensive wetlands support waterfowl, river otter, whooping cranes, and other species. This reach contains the only documented area within the Missouri National Recreational River that has natural reproducing populations of paddlefish due to warm turbid water from the Niobrara River. Downstream, Gavins Point Dam limits Asian carp migration upstream, and subsequent adverse impacts to native species in this reach.

7.2 NATURAL ENVIRONMENT

The 39-Mile District of the MNRR represents one of the few remaining reaches of a once vast and dynamic ecosystem that still exists in a relatively natural state. It is a wide, meandering channel containing numerous shifting sandbars and subsidiary channels. In the Study Area, the Niobrara River valley widens and spreads out into numerous surface streams laden with sand, silt, and organic debris (NPS 1997).

7.2.1 Impact on Riparian or Floodplain Conditions

A large portion of N-12 in the Study Area is located within the Missouri River floodplain. As water levels have risen, wetlands have developed on either side of the roadway. Alternative A7 would be constructed in the Missouri River floodplain, near the base of the bluffs. The analysis of the potential impact on floodplain conveyance found that Alternative A7 would have a negligible effect on the capacity of the Missouri River to convey the 1 Percent Flood. Under Alternative A7, a very small percentage (roughly 0.10 percent) of flood storage is directly displaced by earth fill. The bridges and culverts proposed for Alternative A7 would have more capacity than the existing bridges and culverts and would have a positive effect on floodplain storage equalization.

The Missouri River floodplain within the Study Area is approximately 1 to 2 miles wide, is approximately 9 miles long, and has an area of 1,739 acres. Alternative A7 would encroach upon 132 acres of 100-year floodplain, or 8 percent of the floodplain in the Study Area. Under Alternative A7, the existing N-12 roadway would be removed. A total of approximately 50 acres of existing N-12 roadway within the 100-year floodplain would be removed to existing ground level.

The floodplain in its current condition is a mix of agricultural fields and more natural wetland areas bisected by N-12 and other local gravel roads and private driveways. Vegetation in the floodplain wetlands is often monotypic, dominated by reed canary grass and cattail. Construction of Alternative A7 should have very little effect on the existing vegetation composition. In fact, the banks of the new roadway and the areas impacted by construction would be reseeded with native vegetation, potentially increasing the vegetation diversity. In addition the roadway embankment after the vegetation has established should be more stable than current conditions, decreasing bank sloughing into the surrounding wetlands. The area of road removal would be reseeded and would eventually take on the characteristics of any adjacent land use.

7.2.2 Impact on Upland Conditions

Portions of Alternative A7 are located in upland areas. On the west segment, approximately 0.5 mile of the east end of the alignment is located in the uplands. On the east segment, the extreme west and east portions of the alignment are located in the uplands. These would be permanent conversion of upland areas to roadway. Approximately 146 acres of uplands would be impacted under Alternative A7, if the impacts on agriculture, woodland, and grassland/rangeland are combined.

Temporary impacts on uplands would occur within the limits of construction, but the areas would be regraded to the original contours to the extent possible and would be reseeded with native vegetation. NDOR practices techniques during construction and maintenance that are important to establishing vegetation (NDOR 2012):

1. Minimize soil disturbance and preserve existing plant cover in areas that do not need to be disturbed
2. Phase seeding activities to be concurrent with construction, minimizing exposure of disturbed soils
3. Use erosion and sediment control techniques and products like buffers, topsoil storage, rolled erosion control products, mulch application, and permanent and temporary seed mixtures
4. Protect trees during construction

In addition, NDOR's Plan for the Roadside Environment (NDOR 2008) promotes increased use of native plantings and vegetative management to control noxious weeds in an effort to provide a sustainable noxious weed-controlled roadside environment. NDOR recognizes that the area surrounding N-12 is a biologically unique landscape and must provide wildlife passage and wildlife habitat. Techniques to prevent monotony and control of blowing snow are important for the region. NDOR also strives to preserve the existing views and scenic qualities that brought rise to the scenic designation and all work within the corridor should be in context with the adjacent surroundings. NDOR provides a listing of typical shrub, tree, grass, sedge, legume, and wildflower species recommended for use in the N-12 Study Area in its Plan for the Roadside Environment (NDOR 2008).

7.3 CONCLUSION

Alternative A7 would not have any long term negative effect on the 39-Mile District outstandingly remarkable ecological values. Alternative A7 would have a positive or negligible effect on floodplain

storage equalization. The vegetation in the wetlands, floodplain and uplands would be temporarily impacted during construction, but would be reseeded with native vegetation post-construction, potentially increasing the species diversity.

This page intentionally left blank

SECTION 8.0 FISH AND WILDLIFE VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER

8.1 OUTSTANDINGLY REMARKABLE FISH AND WILDLIFE VALUES

NPS (2012a) describes the outstandingly remarkable fish and wildlife values for Segment 2 of the 39-Mile District:

Fish and aquatic resources are particularly unique and exemplary between Choteau Creek and Running Water. The effects of hydropower peaking flows from Fort Randall Dam become diminished in this section due to the distance from the dam. The segment receives flows from several free-flowing tributaries, including the Niobrara River, that contribute sediment and nutrients supporting a diverse macroinvertebrate community and over 45 native fish species. The Niobrara delta with its extensive backwater complexes and secondary channels supports a particularly high diversity of aquatic species. In addition, the reach supports a high abundance of the federally endangered pallid sturgeon and self-sustaining populations of paddlefish and sauger. Paddlefish spawning habitat in this area is considered to be some of the best in the nation. This river reach provides regionally rare habitat for many naturally reproducing native fish species. The federally endangered interior least tern and federally threatened piping plover nest on sandbars throughout this reach of the river. The sandbars and marshlands, including the Niobrara River delta, are an important stopover site for a high diversity of migrating shorebirds, marsh birds, and waterfowl. A large number of bald eagles also nest and forage along the cottonwood forest of this segment. In addition to avian habitat, a wide variety of snakes and amphibians forage in the area. All five turtle species in the 39-Mile District of the Missouri River corridor are found in this segment, including the false map turtle, a threatened species in the state of South Dakota.

8.2 FISH AND WILDLIFE

Given its relatively natural state and rural setting the MNRR in vicinity of the N-12 Study Area hosts several species of fish and wildlife, including the potential for species that are protected under the Endangered Species Act.

8.2.1 Fisheries

Fish habitat on the Missouri River between Fort Randall Dam and the headwaters of Lewis and Clark Lake is more similar to the natural river conditions than reaches downstream. Native fish in this free-flowing Missouri River segment are relatively productive and dominated by cool and warmwater species, including the catfish, sturgeon, sauger, suckers, and a naturally reproducing population of paddlefish. This reach is one of the recovery priority areas for the pallid sturgeon (NPS 1997). Almost 36,000 fish of multiple species were harvested from this reach in 2005, with channel catfish and walleye being the most abundant species (South Dakota Game, Fish and Parks [SDGFP] 2005).

8.2.2 Wildlife

Wildlife is plentiful in and along the MNRR because of the varied habitat. Small mammals such as mice, voles, bats, rats, and ground squirrels make up approximately 60 percent of the species and furbearers (raccoon, mink, weasel, muskrat, opossum, skunk, beaver, rabbit, and bobcat) contribute approximately 20 percent. White-tailed deer, coyote, red fox, and badger are also common species. The Missouri River ecosystem is a significant pathway for migratory birds, including a number of passerines and birds of prey (NPS 1997).

8.2.3 Threatened and Endangered Species

Federally listed threatened or endangered species which may occur in the area include interior least tern, piping plover, rufa red knot, whooping crane, American burying beetle, pallid sturgeon, northern long-eared bat, and western prairie fringed orchid. Federally listed species of concern which may occur in the area include the sicklefin chub, flathead chub, plains minnow, western silvery minnow, blue sucker, paddlefish, lake sturgeon (also State-listed endangered) and sturgeon chub (also State-listed endangered). In addition to the two fish, the state-listed threatened small white ladies' slipper, may also occur in the area. A Biological Assessment for the N-12 project is available in Appendix L of the PDEIS. NDOR will coordinate with U.S. Fish and Wildlife Service (USFWS) and Nebraska Game and Parks Commission (NGPC) regarding anticipated impacts on threatened or endangered species and their habitat.

8.2.4 Impact on Existing Hydrologic or Biologic Processes

Compared to existing conditions, Alternative A7 provides the MNRR an increased ability to inundate its floodplain without overtopping the roadway. Roadway sideslope erosion would decrease. An assessment of Alternative A7's effect on Missouri River storage is available in Appendix H of the PDEIS. The analysis found that Alternative A7 has a negligible effect on Missouri River conveyance, a moderately positive effect on Missouri River floodplain storage.

Alternative A7 would have a positive impact on existing biologic processes due to increased floodplain connectivity compared to existing conditions. The size the culverts and the spanning of the floodplains by the bridges should allow for increased passage by both aquatic and terrestrial species (Appendix B of the Draft EIS has a detailed list of the proposed culverts and bridges).

8.2.5 Impact on Fish and Wildlife Habitat

An assessment of Alternative A7's impact on fish and wildlife habitat is available in Appendix D of the PDEIS. The alternative would permanently impact 23 acres of agriculture, 67 acres of woodland, 56 acres of grassland, and 91 acres of wetlands.

Alternative A7 would include improvements to and construction of bridges over Ponca Creek, Harry Miller Creek, Medicine Creek, and Bazile Creek, as well as a number of other culverts and structures at several drainageways. Alternative A7's impact on 91 acres of wetlands would be considered negligible because there area 6,100 acres wetlands located within and immediately adjacent to the Study Area.

For both segments, where the new alignment deviates from the exiting N-12 alignment, the N-12 roadway would be removed to the existing ground level. Roadway removal includes all pavement and roadway embankment.

Alternative A7 would result in temporary disturbances to vegetated habitat from construction of the roadway. Temporarily impacted areas would be revegetated following construction according to NDOR's Plan for the Roadside Environment. Revegetation may increase the number of native species in these areas, which would offer a beneficial impact. Construction activities and disturbed soils are susceptible to invasion and spread of noxious weeds. NDOR's Noxious Weed Control specifications would be used to control the establishment and spread of noxious and invasive weeds.

Studies have documented that traffic noise does affect wildlife negatively; negative effects include hearing loss, increase in stress hormones, altered behaviors, interference with communication during breeding activities, differential sensitivity to different frequencies, and deleterious effects on food supply or other habitat attributes (Forman and Alexander 1998). However, the effect of Alternative A7 would likely be the same as existing conditions because a new roadway is not anticipated to increase the number of cars that travel through the Study Area.

NDOR would follow its procedures outlined in the Avian Protection Plan (NDOR 2014) as it pertains to clearing, grubbing, utility relocations, and tree removal. Typically, NDOR schedules projects with large areas of tree or vegetation removal and major bridge reconstruction outside of the primary migratory bird nesting season in Nebraska, which generally occurs between April 1 and September 1. If construction work occurs during the primary nesting season, NDOR conducts nesting surveys to prevent accidental takes of birds or active nests. NDOR has a Bald Eagle Survey Protocol in place to prevent impacts on bald eagles and their nests (NDOR2014).

Alternative A7 would have negligible impacts on woodlands, grassland/rangeland, and wetlands and therefore would have negligible impacts on the wildlife that use these habitats.

8.3 POTENTIAL OFF-SITE CHANGES

Potential off-site changes are also known as indirect effects. Indirect effects have been identified for the N-12 project. Fragmentation of wetlands or a change in wetland hydrology could lead to indirect effects of Alternative A7 on fish and aquatic resources. The subsequent removal of the existing roadway would decrease existing fragmentation. Fragmentation under Alternative A7 is minimized further due to the increased number and length of bridges incorporated into the design.

Habitat fragmentation may also occur when portions of a natural channel are placed within a culvert (Appendix B provides details of the number and lengths of culverts). Culvert lengths are increasing under Alternative A7 compared to the existing condition. Under Alternative A7, while new areas of natural channel would be placed in a culvert, the removal of existing culverts associated with the removal of the existing roadway would also occur.

At a larger floodplain scale, the wetlands may have increased function due to increased connection from more and larger culverts, and removal of the existing roadway. Alternative A7 would not alter wetland hydrology within the floodplain. The mortality impacts from road runoff (for example, deicing sand/salt mixes) are anticipated to be similar to existing conditions.

8.4 CONCLUSION

The N-12 project would have negligible effects on the natural environment of the MNRR due to direct impacts of habitat conversion and indirect effects of localized habitat fragmentation. Alternative A7 would have a positive impact on Missouri River floodplain connectivity.

SECTION 9.0 GEOLOGICAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER

9.1 OUTSTANDINGLY REMARKABLE GEOLOGICAL VALUES

NPS (2012a) describes the outstandingly remarkable geological values for Segment 2 of the 39-Mile District:

Below Choteau Creek, the geology transitions from Pierre shale to the stunning Niobrara chalk, which is the same material that comprises the famous “White Cliffs of Dover.” In the widening valley, alluvial banks are bound by bluffs on both sides of the river. Depositional processes begin to dominate the river, and channel complexity increases downstream. These processes form numerous islands, sandbars, chutes, and backwaters. The picturesque delta complex near the Niobrara River confluence is the only large delta in the Missouri National Recreational River and contains extensive features such as backwaters, side channels, sandbars, chutes, developing floodplains, and islands important to waterfowl, fish, and other wildlife. The segment includes three large tributaries, including the Niobrara River and Ponca and Choteau creeks, plus some smaller tributaries. The reach also contains large slumps along the bluffs near the Niobrara confluence.

9.2 EXISTING GEOLOGICAL CONDITIONS

The MNRR is situated between the glaciated and unglaciated portions of the Missouri Plateau in the Great Plains Province of the Interior Plains. The Missouri River in this area marks the terminus of the southern advance of the Mankato substage of the Wisconsin glaciation period in the region. The adjacent areas along the 39-Mile District are characterized by gently sloping bluffs to the north and steep dissected bluffs rising sharply from the floodplain on the south (NPS 2012b). The Study Area contains geologically unique Niobrara chalk bluffs.

The delta at the confluence of the Missouri and Niobrara rivers is not within the Study Area. Ponca, Harry Miller, Medicine and Bazile creeks are within the Study Area, and NDOR proposes new bridges that would span the floodplains of these creeks.

Historic and existing land use and infrastructure development (roads, bridges, utility lines, etc.) have had the most dramatic impact on the geological values of the MNRR. Developed lands account for 5.7 percent of the Study Area, while roads account for 2.8 percent.

9.3 CONCLUSIONS

Alternative A7 would replace the existing roadway on a shifted and elevated alignment. This alternative would require fill material to construct at an elevation above the projected water surface elevation of the Missouri River 50 years into the future during a 100-year flood event, including wave action. The west segment of A7 would be constructed on average 19 feet above the existing ground. The east segment of A7 would be constructed on average 16 feet above the existing ground. The fill material would be obtained from a site outside of the MNRR, and the contractor would obtain the proper permits, including a Section 404 permit. Where the new alignment deviates from the existing

N-12 alignment, the N-12 roadway would be removed to existing ground level. Roadway removal includes all pavement and roadway embankment.

Alternative A7 would not cause an impact on the bluff face. Any excavation needed would be to allow for the 6:1 shoulder slope and 10-foot-wide ditch to meet NDOR's roadway standards.

In context of the surrounding land use, and because a roadway exists in the Study Area currently, Alternative A7 would have a negligible effect on the outstandingly remarkable geological values.

SECTION 10.0 RECREATIONAL VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER

10.1 OUTSTANDINGLY REMARKABLE RECREATIONAL VALUES

NPS (2012a) describes the outstandingly remarkable recreational values for Segment 2 of the 39-Mile District:

Niobrara State Park, situated at the confluence of the Missouri and Niobrara rivers, provides a wide variety of opportunities and experiences, including interpretation of both natural and cultural resources. Expansive public land[s] provide a high probability of solitude while hiking and camping in the midst of breathtaking scenery.

10.2 RECREATIONAL OPPORTUNITIES ON THE MISSOURI NATIONAL RECREATIONAL RIVER

High-quality outdoor recreation, including fishing, hunting, trapping, wildlife observation, and boating is available along the 39-Mile District. The valley also provides scenic views of natural landscapes including bottomlands, cottonwood forests, wooded draws, forested hills, sand dunes, high-bank islands, wetlands, and chalkrock bluffs.

10.2.1 Water-Based Recreation

There are multiple entry points into the MNRR. Local users put their boats, canoes, or kayaks onto the 39-Mile District of the Missouri River at any of the public or private boat ramps. Public boat ramps occur at Randall Creek Recreation Area, Sunshine Bottom, Verdel Landing WMA, the old Niobrara town site, and at Ferry Landing WMA. Private boat ramps occur in the Study Area in the Lazy River Acres development, near Verdel Landing. Niobrara Landing is the most heavily used landing on the 39-Mile District. Weekends during the summer see the heaviest use of the 39-Mile District, but anglers and hunters use the river during the fall season (NPS 1997).

The Missouri River between Fort Randall Dam and Gavins Point Dam provides a valuable fisheries resource for the states of Nebraska and South Dakota. This river reach annually supports over 100,000 hours of fishing activity. Almost 36,000 fish of multiple species were harvested from this reach in 2005, with channel catfish and walleye being the most abundant species (SDGFP 2005).

10.2.2 Land-Based Recreation

There are many small towns on both the Nebraska and South Dakota sides of the Missouri River, so there are multiple arrival experiences in the local area. The MNRR can be crossed at Gavins Point Dam, Standing Bear Memorial Bridge, and at Fort Randall Dam.

Developed public camping is available at Randall Creek Recreation Area, Sunshine Bottom, Niobrara State Park, and the Lewis and Clark State Recreation Area (SRA). Private campgrounds occur in the Study Area in the Lazy River Acres development.

As described above, the Lewis and Clark National Historic Trail (NHT) is located within the 39-Mile District of the MNRR. Recreationists interested in retracing Lewis and Clark's historic journey could hike, explore, ride horseback, raft, canoe, ski, or snowshoe in areas along the Lewis and Clark NHT.

Waterfowl hunting along the river and its floodplains and white-tailed deer hunting in the bluffs and floodplain are popular activities in the Study area. Public hunting lands include Ferry Landing SRA (waterfowl) and Bazile Creek WMA (pheasant, quail, waterfowl, deer, squirrel, rabbit). Hunting is allowed on private land with permission of the landowner (NPS 1997).

Developments on the Missouri River include permanent and seasonal residences. Summer use of cabins and trailers also occurs along the Missouri River in the Study Area. Individual owners plan and manage their developments without zoning or guidelines (NPS 1997).

10.2.3 Existing Noise in Recreation Areas

Noise levels in the Study Area are varied, with relative tranquility in some areas, typical sounds in more developed areas near towns, and seasonal sounds of motorboats in other areas. The opportunity to experience a quiet, natural environment is part of the relatively primitive recreational experience that is valued on the recreational rivers (NPS 1997). Noise from cars and truck traffic using N-12 exists today.

10.3 IMPACTS ON RECREATION

Impacts on recreation could include scenic impacts and noise impacts, but no instream obstructions. In the long-term, a new roadway would be more safe and reliable for those recreationists that use the facilities along N-12.

10.3.1 Scenic Impacts

Construction of Alternative A7 may negatively affect the scenic values of the MNRR, albeit short-term. During construction water and land based recreationists would be exposed to workers, workers' vehicles, cranes, bulldozers, scrapers, and other equipment working at the project site. Construction activities would be visible upstream and downstream from both land and water and would intrude upon the visual qualities associated with the river. For some recreationists, the construction would be an inconvenience, but for others it may completely degrade their recreational experience, particularly hunters and those seeking solitude.

Alternative A7 would be constructed away from the existing N-12 roadway, along the base of the bluffs, and at a higher elevation. The visual impact of a new roadway on or near the same alignment would be negligible to moderate (see Section 11.0, below).

10.3.2 Noise Impacts

Construction noise may affect recreational use, as it may disturb users and wildlife in the area. However, construction is short-term and BMPs could be used to decrease construction noise. Alternative A7 would have no affect on noise once the roadway is finished, as the N-12 traffic that exists today is expected to be similar to any future roadway traffic.

10.3.3 Instream Obstruction

Alternative A7 would not create any instream obstructions in the MNRR.

10.4 CONCLUSION

Short-term, construction would cause noise impacts and scenic impacts on recreation. Long-term, an improved wider roadway with lower flooding potential would be a benefit to both water-based and land-based recreationists.

This page intentionally left blank

SECTION 11.0 SCENIC VALUES OF THE MISSOURI NATIONAL RECREATIONAL RIVER

11.1 OUTSTANDINGLY REMARKABLE SCENIC VALUES

NPS (2012a) describes the outstandingly remarkable recreational values for Segment 2 of the 39-Mile District:

Downstream of Choteau Creek, the landscape transitions from impressive chalkrock bluffs to more open, rolling hills. The river breaks into extensive braided channels and shallows that provide habitat for high concentrations of nesting and migratory birds. Scenic vistas from Niobrara State Park and Chief Standing Bear [Memorial] Bridge Overlook provide sweeping views where the sediment-laden, shallow waters of the Niobrara intertwine with the Missouri River. The pleasant rural landscape along these segments allows visitors to imagine the past unfolding on the grass-covered hills under starry night skies.

11.2 OVERVIEW OF THE APPEARANCE OF THE MISSOURI NATIONAL RECREATIONAL RIVER

The 39-Mile District is one of the last representative parts of the undammed, unchannelized middle Missouri River. This section of the Missouri and Niobrara rivers offer experiences involving all the senses. Exceptional scenery surrounds river users, and views range from open vistas to enclosing, chalky bluffs. People who are fishing, hunting, or canoeing on the Missouri River can experience natural sounds. The open scenic views of the river valleys attract tourists and local people who take leisurely drives along the river bluffs (NPS 1997).

11.2.1 Landform and Terrain

The Study Area is primarily a rural area where agriculture plays a major role in the overall economy of the area. Primary products include cattle, hogs, corn, wheat, soybeans, and milo.

The soils in this area vary from level to nearly level, silty and clayey soils on floodplains of the Missouri River and its terraces to undulating to steep loamy and clayey soils on uplands. Silty clayey soils on the Missouri River floodplain are deep and poorly drained. Most of these areas support native vegetation and provide wildlife habitat. The bedrock Pierre shale in the Niobrara area is prone to landslides; this can often cause problems when roads are built through it (NPS 1997).

In the Study Area, the Missouri River flows relatively unrestricted between Nebraska and South Dakota through a river valley 1 to 2 miles wide which is flanked by sheer chalkstone bluffs and rolling, loess-covered hills. The meandering river ranges from a few inches to over 30 feet deep as the braided channel winds among willow and cottonwood covered islands and shifting sandbars. Near its confluence with the sediment-laden Niobrara River, extensive emergent wetlands form a complex of intertwined channels which present a contrast to other reaches of the Missouri River. The surrounding landscape transitions from riparian cottonwood forests to grasslands and cedar-dominated bluffs. Scattered farmsteads dot the undulating hills within an undeveloped rural landscape predominantly in pastures which evoke the vast original prairies. The combination of landforms, stream channels, and plant communities in the Study Area provide a rare glimpse of the natural conditions encountered by early inhabitants of the area.

11.2.2 Vegetation

The MNRR is located within the Tallgrass Prairie Province of the Prairie Division ecoregion. The region includes tallgrass and mixed grasslands. Woody vegetation is relatively rare except in drainage areas and on the floodplain. Native trees such as red cedar, bur oak, and green ash grow in drainages and form wooded draws. Riparian forests of cottonwood, willow, elm, and silver maple grow on the floodplains of the Missouri and lower Niobrara rivers (NPS 1997).

Where agriculture is not practiced, some remnants of native prairie can be found on the floodplain, dominated by vegetation such as prairie cordgrass, Canada wildrye, and switchgrasses in wet areas adjacent to the river. This is especially true along the steep north-facing bluffs in Nebraska where farming is impractical because of topography (NPS 1997).

Noxious and invasive weeds are widely distributed in the MNRR. Leafy spurge, spotted knapweed, and Canada thistle are designated noxious weeds by Nebraska. Purple loosestrife is spreading rapidly and threatening wildlife habitat on the Missouri and Niobrara rivers. Hybrid cattails, Eastern red cedar, smooth brome, and Russian olive are common invasive species (NPS 1997).

11.2.3 Wildlife

Wildlife that use the area are described in Section 6.3, above.

11.2.4 Methodology of Impact Analysis

NPS selected eight key observation points for which visual renderings were created (see Figure 3 and Appendix M of the PDEIS).

The key observation points are:

1. Bazile Creek Wildlife Management Area (WMA)
2. Missouri River Channel East
3. Missouri River Channel West
4. Running Water (boat access)
5. Chief Standing Bear Memorial Bridge East
6. Chief Standing Bear Memorial Bridge West
7. Niobrara State Park Group Lodge
8. Niobrara State Park High Point

To assess the visual impacts based on the renderings developed by HDR, NPS developed the following criteria to analyze the alternatives in a letter dated November 9, 2012 (NPS 2012c).

High Impact = 3	Likely to cause a substantial long-term and adverse effect on scenic quality, an existing viewshed, or key observation point due to the visual contrast
-----------------	---

between the proposed project and the existing landscape conditions.

- Moderate Impact = 2 Likely to cause a noticeable but not substantial change in scenic quality due to the visual contrast between the proposed project and the existing landscape conditions. Such a change would be noticeable to a sensitive viewer, but not all viewers.
- Low/No Impact = 1 Likely to cause no change or a negligible change in scenic quality due to the visual contrast between the proposed project and the existing landscape conditions.

Using its criteria, an interdisciplinary team of the MNRR and Lewis and Clark National Historic Trail staff assessed the visual impact of Alternative A7 (see Table 1).

Table 1. Level of Visual Impact

Key Observation Point	Level of Visual Impact of Alternative A7 ¹
Bazile WMA	1
Missouri River Channel East	1
Missouri River Channel West	1
Running Water	1
Chief Standing Bear Memorial Bridge East	1
Chief Standing Bear Memorial Bridge West	2
Niobrara State Park Group Lodge	1
Niobrara State Park High Point	1

Note:

¹ Levels of Visual Impact: 1 = Likely to cause no change or a negligible change in scenic quality due to the visual contrast between the proposed project and the existing landscape conditions. 2 = Likely to cause a noticeable but not substantial change in scenic quality due to the visual contrast between the proposed project and the existing landscape conditions. Such a change would be noticeable to a sensitive viewer, but not all viewers. 3 = Likely to cause a substantial long-term and adverse effect on scenic quality, an existing viewshed, or key observation point due to the visual contrast between the proposed project and the existing landscape conditions.

Source:

NPS. 2012. Letter from Michael T. Reynolds, Regional Director, NPS, to Becky Latka, Project Manager, Corps. November 9.

11.3 IMPACTS ON VIEWS AND VIEWERS

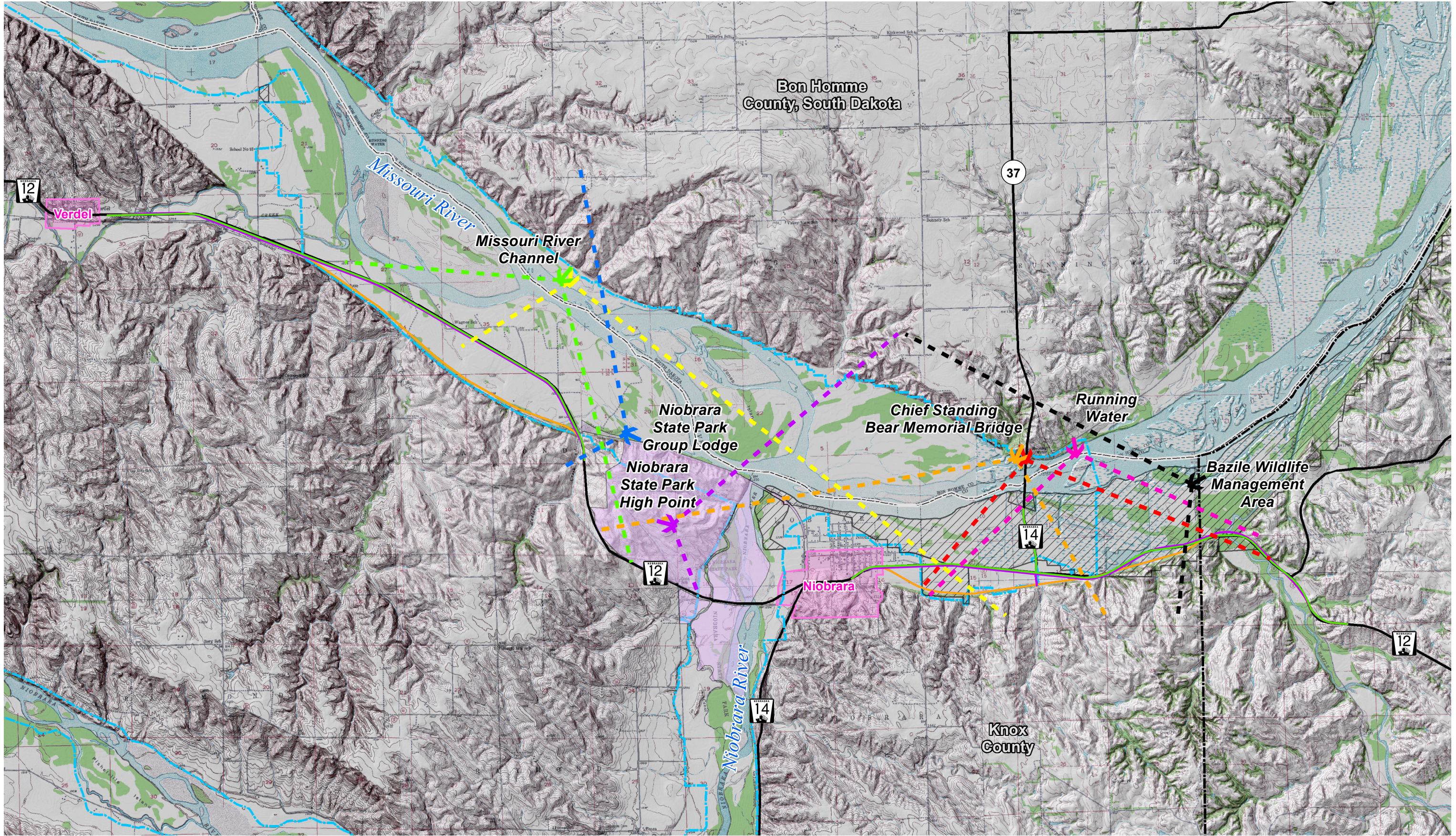
Alternative A7 would be constructed at the base of the bluffs and its impact on the visual landscape would be negligible to moderate. In some areas, the alignment parallels the existing roadway. In these areas, the visual impacts would be similar to existing. In other areas, the roadway would be further away from the river, so the view of the river may be completely obstructed along some portions of the roadway and the roadway may not be as visible from the river. Finally, because this alternative follows the base of the bluffs, the roadway would fall in the shadow of the bluffs. From the Chief Standing Bear Memorial Bridge West key observation point, Alternative A7 abuts the bluffs and is slightly more apparent than if the road remained in the floodplain. The bluffs are the dominant feature from the river, so the roadway would be a minor feature in the viewshed.

For both the west and east segments, where the new alignment deviates from the exiting N-12 alignment, the N-12 roadway would be removed to the existing ground level. Roadway removal includes all pavement and roadway embankment.

Indirect effects were assessed. Because the road would remain in the floodplain under Alternative A7, the perceived quality of the natural environment and its aesthetic values would remain unchanged.

11.4 CONCLUSION

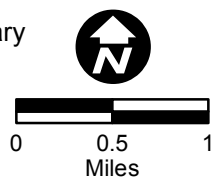
NDOR would consider any input from NPS on the moderate visual impact of Alternative A7 from the Chief Standing Bear Memorial Bridge West key observation point to avoid or eliminate that impact.



Legend

- Alternative A1
- Alternative A2
- Alternative A3
- Alternative A7 (Applied-for Project)

- WMA
- State Park
- City Limits
- Counties
- Missouri Recreational River Boundary
- Santee Sioux Nation



Key Observation Points

N-12 Niobrara East and West
Knox County, Nebraska
Environmental Impact Statement



DATE	October 2015
FIGURE	3

This page intentionally left blank

SECTION 12.0 REFERENCES

- 47 Federal Register 39454-39461. September 7, 1982. Final Revised Guidelines for Eligibility, Classification and Management of River Areas; National Wild and Scenic Rivers System.
- 16 USC 1271-1287. Conservation. Wild and Scenic Rivers Act.
- Forman, Richard T.T., and Lauren E. Alexander. 1998. "Roads and their major ecological effects." *Annual Review of Ecology and Systematics*. 29:207-31.
- Interagency Wild and Scenic Rivers Coordinating Council. 2002. *Wild and Scenic River Management Responsibilities*. Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council. <http://www.rivers.gov/documents/management.pdf>.
- . 2004. *Wild and Scenic Rivers Act: Section 7*. Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council. <http://www.rivers.gov/documents/section-7.pdf>.
- Ludwickson, John. 2009. "Archeological Resources Identification and National Register Evaluation of the 'Niobrara East And West' Project, S-12-5(1011), C.N. 31674, Knox County, Nebraska." February. Nebraska State Historical Society, Archeology Division. Prepared for the Nebraska Department of Roads.
- National Park Service (NPS). 1997. *Final General Management Plan Environmental Impact Statement, Missouri/Niobrara/Verdigre Creek National Recreational Rivers, Nebraska/South Dakota*.
- . 2005. *Missouri National Recreational River, Nebraska-South Dakota, Water Resources Information and Issues Overview Report*. Technical Report NPS/NRWRD/NRTR-2005/326. March. http://infolink.cr.usgs.gov/science/documents/mnrr_issuesoverview.pdf.
- . 2008. *Preliminary determination pursuant to Section 7(a) of the Wild and Scenic Rivers Act for the restoration of emergent sandbar habitat complexes by the U.S. Army Corps of Engineers, Omaha District, within the Missouri National Recreational River, Nebraska and South Dakota*. August 8.
- . 2010. "Frequently Asked Questions." National NAGPRA. Accessed September 30, 2010. http://www.nps.gov/nagpra/FAQ/INDEX.HTM#What_is_NAGPRA.
- . 2012a. *Outstandingly Remarkable Values*. Missouri National Recreational River. Nebraska, South Dakota. May 14.
- . 2012b. *Natural Features and Ecosystems*. National Park Service. Accessed February 19, 2013. October 19. <http://www.nps.gov/mnrr/naturescience/naturalfeaturesandecosystems.htm>.
- . 2012c. Letter from Michael T. Reynolds, Regional Director, NPS, to Becky Latka, Project Manager, Corps. November 9.

- National Research Council. 2002. *The Missouri River Ecosystem: Exploring the Prospects for Recovery*. Washington D.C.: National Academy Press.
- Nebraska Department of Environmental Quality. (NDEQ). 2006. Title 117 Nebraska Surface Water Quality Standards. <http://www.deq.state.ne.us/>.
- . 2014. *2014 Water Quality Integrated Report*.
- Nebraska Department of Roads (NDOR). 2008. *Construction Stormwater Best Management Practices*. Accessed January 26, 2009. <http://www.dor.state.ne.us/environment/guides/Const-Strmwtr-Pocket%20Guide.pdf>.
- . 2009. Memorandum from Robert Carnazzo, Hydraulics Unit Head, Roadway Design Division, NDOR, to file. July 7.
- . 2012. *NDOR Roadside Vegetation Establishment and Management*. Accessed December 28, 2012. <http://www.roads.ne.gov/environment/guides/veg-manual.pdf>.
- . December 9, 2014. *Avian Protection Plan*. <http://www.transportation.nebraska.gov/environment/guides/avian-protection-plan.pdf>.
- Olson, R.L. 2009. “Niobrara – Knox County.” University of Nebraska-Lincoln: Virtual Nebraska. Accessed January 16, 2009. <http://www.casde.unl.edu/history/counties/knox/niobrara/>
- South Dakota Game, Fish and Parks (SDGFP). 2005. *2005 Angler use and harvest survey of the Missouri River in South Dakota and Nebraska from Fort Randall Dam to Gavins Point Dam*. Annual Report No. 06-16.
- South Dakota Department of Environment and Natural Resources (DENR). 2008. *The 2008 South Dakota Integrated Report for Surface Water Quality Assessment*. Accessed January 14, 2009. <http://www.state.sd.us/denr/Documents/08IRFinal.pdf>.
- U.S. Army Corps of Engineers (Corps). 2012. *Missouri River Mainstem System 2012-2013 Annual Operating Plan*. <http://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/finalAOP2012-2013.pdf>.
- U.S. Environmental Protection Agency (EPA). 2015. *National Assessment Database: 303(d) Lists/Assessment Unit Information Year 2006*. http://iaspub.epa.gov/waters10/attains_nation_cy.control?p_report_type=T.
- U.S. Geologic Survey (USGS). 2006. “Geomorphic classification and assessment of channel dynamics in the Missouri National Recreational River, South Dakota and Nebraska.” *Scientific Investigations Report*. 2006-5313.
- Varilek, Brandon. 2015. Email from Brandon Varilek, NDOR Materials and Research, to Meagan Schnoor, HDR, regarding Niobrara E&W History. September 9.

SECTION 13.0 LIST OF PREPARERS

National Park Service

Rick Clark	Superintendent, MNRR
Hector Santiago	Regional Rivers Coordinator, Midwest Regional Office

U.S. Army Corps of Engineers

Becky Latka	Project Manager
-------------	-----------------

HDR

Matt Pillard	Project Manager
Meagan Schnoor	Environmental Scientist
Kim Gust	Technical Editor

This page intentionally left blank